

IN THE CLAIMS

Please amend the claims as follows:

Claim 1. (Currently Amended) An Ag sputtering target, made by conducting a cold forging operation one or more times, the cold forging operation comprising solid forging an Ag columnar mass so as to be extended in an axial direction thereof, and cold upsetting the solid forged Ag columnar mass in the axial direction while maintaining a columnar shape of the solid forged Ag columnar mass; and slicing a cold-worked columnar mass obtained by the cold forging operation in rounds after being heat treatment,

wherein the Ag sputtering target has three-dimensional fluctuation of grain sizes not more than 18%; and

wherein the three-dimensional fluctuation of the grain sizes measured by:

exposing a plurality of sputtering surfaces by slicing the Ag sputtering target in planes parallel to a sputtering starting surface,

selecting a plurality of locations on each of the exposed sputtering surfaces, and

measuring grain sizes D at all the selected locations of all the exposed sputtering surfaces by executing i) to iv) below,

i) taking an optical micrograph of the selected location,

ii) drawing a plurality of straight lines equal to or more than four in a grid pattern on the obtained micrograph,

iii) investigating a number n of grain boundaries on each of the straight lines, and calculating a grain size d (unit: μm) for each of the straight lines on the basis of the following formula:

$$d = L/(nm)$$

wherein

L: length of the straight line,

n: number of the grain boundaries on the straight line,
m: magnification of the optical micrograph, and
iv) calculating the grain size D at the selected location as an average value of the grain sizes d for the plurality of straight lines;
calculating values A1 and B1 using the formula below and based on the results of measurement of the grain sizes D at all the selected locations of all the exposed sputtering surfaces:

$$A1 = (D_{\max} - D_{\text{ave}})/D_{\text{ave}} \cdot 100(\%)$$

$$B1 = (D_{\text{ave}} - D_{\min})/D_{\text{ave}} \cdot 100(\%)$$

wherein

D_{\max} : maximum value among the grain sizes D at all the selected locations

D_{\min} : minimum value among the grain sizes D at all the selected locations

D_{ave} : average value of the grain sizes D at all the selected locations; and selecting larger one of the values A1 and B1 as the three-dimensional fluctuation of the grain sizes.

Claim 2. (Original) The Ag sputtering target according to claim 1, wherein the average grain size D_{ave} is not more than 100 μm , and the maximum grain size D_{\max} is not more than 120 μm .

Claim 3. (Currently Amended) An Ag sputtering target, wherein the Ag sputtering target has three-dimensional fluctuation of X-ray diffraction peak intensity ratios (X_4/X_4) (X_2/X_1) not more than 35%; and

wherein the three-dimensional fluctuation of the X-ray diffraction peak intensity ratios (X_2/X_1) is measured by:

exposing a plurality of sputtering surfaces by slicing the Ag sputtering target in planes parallel to a sputtering starting surface;

selecting a plurality of locations on each of the exposed sputtering surfaces;

measuring the X-ray diffraction peak intensities of the Ag at all the selected locations of all the exposed sputtering surfaces;

calculating the X-ray diffraction peak intensity ratio (X_2/X_1) for each of the selected locations, the X-ray diffraction peak intensity ratio (X_2/X_1) being defined as the ratio of the largest Ag X-ray diffraction peak intensity X_1 in relation to the second largest Ag X-ray diffraction peak intensity X_2 ;

calculating values A2 and B2 using the formula below and based on the X-ray diffraction peak intensity ratios (X_2/X_1) at all the selected locations of all the exposed sputtering surfaces,

$$A2 = (R_{\max} - R_{\text{ave}})/R_{\text{ave}} \cdot 100(\%)$$

$$B2 = (R_{\text{ave}} - R_{\min})/R_{\text{ave}} \cdot 100(\%)$$

wherein

R_{\max} : maximum value among the X-ray diffraction peak intensity ratios (X_2/X_1) at all selected locations

R_{\min} : minimum value among the X-ray diffraction peak intensity ratios (X_2/X_1) at all selected locations

R_{ave} : average value of the X-ray diffraction peak intensity ratios (X_2/X_1) at all selected locations; and

selecting the larger one of the values A2 and B2 as the three-dimensional fluctuation of the X-ray diffraction peak intensity ratio (X_2/X_1).

Claim 4. (Previously Presented) An Ag sputtering target according to claim 1, having a disc-like shape.

Claim 5. (Previously Presented) An Ag sputtering target according to claim 1, formed by Ag alloy containing rare-earth metal.

Claim 6. (Original) An Ag sputtering target according to claim 5, wherein a content of the rare-earth meal is not more than 5 atomic percent (not including 0 atomic percent).

Claim 7. (Cancelled).

Claim 8. (Withdrawn) A method for producing an Ag thin film, comprising:
forming the Ag thin film on a substrate by sputtering using the Ag sputtering target according to claim 1.

Claim 9. (Previously Presented) An Ag sputtering target according to claim 3, having a disc-like shape.

Claim 10. (Previously Presented) An Ag sputtering target according to claim 3, formed by Ag alloy containing rare-earth metal.

Claim 11. (Previously Presented) An Ag sputtering target according to claim 10, wherein a content of the rare-earth meal is not more than 5 atomic percent (not including 0 atomic percent).

Claim 12. (Withdrawn) A method for producing an Ag thin film, comprising:
forming the Ag thin film on a substrate by sputtering using the Ag sputtering target
according to claim 3.